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Technologists, Engineers and Designers for a Cleaner Environment

BiosorptionTM

An Air Pollution Control Solution



**Development, Demonstration and Deployment (D3)
of Cost Effective Environmental Technologies**



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What is Biosorption?

- Advanced air pollution control technology
- Utilizes contaminant sorption/aerobic microbial biodegradation principles
- One step unit operation
- Combines art of contaminant sorption

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What Does Biosorption Treat?

- Majority of HAPs in Title III of CAAA 1990;
- Majority of VOCs, including Hydrocarbons (C4+);
- Aldehydes, Ketones, Esters, Alcohols and Aromatics;
- Odor bearing organic compounds
- Low concentrations of chlorinated VOCs (TCE, PCE) in presence of other organic compounds

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What Flow Rates Can Biosorption Handle?

- Bioreactor sized to treat pilot scale flow rates
- Units treating 5,000 - 100,000 SCFM
- Shipping limitation = 20' r of vessel transported by highway
- Reactors above 20' r of 14 foot - fabricated at site

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Biosorption Alleviates: Typical Biofiltration Technology Problems

- Provides effective pH buffering
- Safeguards Biomass from mineral acid destruction
- Bed formulated = highly impervious, structurally rigid material
- Improved kinetics = significant equipment sizing reduction
- Sorption prior to Biodegradation = variation flexibility
- Concentration ensures high destruction efficiency
- Surfactants solubilize Hydrophobic contaminants
- Moisture/nutrient addition

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Biosorption's Clear Advantages

- Easy operation & maintenance (O&M);
- “GREEN” ? produces no Nox or CO;
- Complete destruction without need for further treatment;
- No secondary waste generation;
- Lowest O&M Costs among competing technologies;
- Easy to obtain permits

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Comparisons: 10,000 CFM UNIT TREATING 300mg/m³ VOCs

TECHNOLOGY	INSTALLED CAPITAL COST(\$)	OP COST(\$/million Cft of Air)
1. Incineration	1,500,000.00	150.00
2. Chemical Oxidation	700,000.00	60.00
3. Activated Carbon (with Regeneration)	200,000.00	20.00
4. BIOSORPTION	250,000.00	6.00

Source: Industry survey from actual users. Does not include recent price escalation for Natural Gas.

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What Flexible Options Does VEETech Offer?

- Biosorption = systems as perm facility or mobile unit
- Mobile units are trailer modular = easy set-up & transport
- Can also be used as an integrated waste treatment units, treating air emissions and facility wastewater

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